

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1-30 are requested to be cancelled. Claims 31-51 are being added. No new matter has been added and support for new claims 31-51 can be found at least on pages 10-24 of the specification.

This amendment adds and deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 31-51 are now pending in this application.

Claim Rejections under 35 U.S.C. § 112

Claims 1-30 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention. In response, Applicants have cancelled claims 1-30 and added new claims 31-51. Applicants submit that claims 31-51 are conform to the requirements of 35 U.S.C. § 112. Accordingly, withdrawal of the rejection is respectfully requested.

Claim Rejections under 35 U.S.C. § 101

Claims 13-24 were rejected under 35 U.S.C. § 101 for allegedly being directed to non-statutory subject matter. In response, claims 13-24 have been cancelled making this rejection moot. Applicants note that new claims 40-48 are directed to a computer program embodied in a computer readable medium and are therefore directed to patentable subject matter. Accordingly, withdrawal of the rejection is respectfully requested.

Claim Rejections under 35 U.S.C. § 102

Claims 1-30 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 7,110,583 (“Yamauchi”). In response, without agreeing or acquiescing to the

rejection, Applicants cancel claims 1-30 and add new claims 31-51. Further, Applicants traverse the rejection for at least the additional reasons set forth below.

Applicants rely on M.P.E.P. § 2131, entitled “Anticipation – Application of 35 U.S.C. § 102(a), (b) and (e)” which states, “a claim is anticipated only if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Applicants respectfully submit that Yamauchi does not describe each and every element of the claims.

Independent claims 31, 40 and 49 are directed to a method, computer program and image processing apparatus for extracting a region of interest from a plurality of cross-sectional images of a sliced three-dimensional object. For example, the claimed method includes the steps of specifying an initial region from a first cross-sectional image of the plurality of cross sectional images, calculating a first value based on pixel values of each pixel inside the initial region, calculating a second value based on pixel values of each pixel outside the initial region, selecting, as a first temporary region, a region that is at the same position as the initial region, from a second cross-sectional image corresponding to a second cross section next to a first cross section corresponding to the first cross-sectional image, obtaining a pixel value of a first pixel near a boundary of the first temporary region, determining whether the first pixel is inside the region of interest based on the pixel value of the first pixel, the first value, and the second value, obtaining a pixel value of a second pixel outside the first temporary region and near the first pixel, if the first pixel is determined to be inside the region of interest, obtaining a pixel value of a third pixel inside the first temporary region and near the first pixel, if the first pixel is determined to be outside the region of interest, determining whether the second pixel or third pixel is inside the region of interest based on the pixel value of the second pixel or third pixel obtained, the first value, and the second value, selecting, as a second temporary region, a region that is at the same position as the initial region including all pixels that have been determined to be inside the region of interest in the second cross-sectional image, from a third cross-sectional image corresponding to a third cross section next to the second cross section, obtaining a pixel value of a fourth pixel near the second temporary region, calculating a third value based on pixel values of each pixel inside the first temporary region and the initial region, calculating a fourth value

based on pixel values of each pixel outside the first temporary region and the initial region and determining whether the fourth pixel is inside the region of interest based on the pixel value of the fourth pixel, the third value, and the fourth value.

Accordingly, the claimed invention uses region-based segmentation to extract a region of interest from a digital model of organism tissue. In contrast, Yamauchi does not disclose each and every limitation of the claimed invention. Yamauchi is directed to an ultrasonic device that performs image processing using an edge-based SNAKES model. *See Abstract; Col. 14, lines 13-16; Col. 15, lines 1-4.* Snakes are edge-based models widely used for object shape modeling, in single images, and for tracking, in image sequences. Accordingly, the method, computer program and apparatus set forth in claims 31-51 varies greatly from the process disclosed in Yamauchi. M.P.E.P. § 2131 states that “[t]he identical invention must be shown in as complete detail as is contained in the claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). Here, Yamauchi fails to disclose a region-based segmentation method or apparatus in any detail. Accordingly, Applicants request reconsideration and that new claims 31-51 be allowed.

Moreover, Yamauchi discloses that a “contour correcting unit 114 makes the above judgment as to whether the extracted contour takes an abnormal shape which deviates from the predetermined standard by referring to a differential between the current contour and a contour in a database that was generated in the past, or to an energy value of an active contour model, which is described later. For correcting the contour, the contour correcting unit 114 first specifies, out of the database, a typical contour that is the most alike to the contour to be corrected, and then corrects data on this contour’s part that significantly differs from that of the specified typical contour to make the part match the typical contour.” *See Column 10, lines 47 to 58.* Yamauchi also discloses the specific details of the active contour model at column 13, line 60 to column 14, line 19. The SNAKES model used by Yamauchi is based on energy minimization around a boundary. However, in the SNAKES model, it is difficult to set parameters and time required for calculation is very long. In contrast, in the claimed region-based segmentation method, there is no need to set any parameters, implementation is easy, and time required for calculation is short.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By GLenn Law Reg. No. 59,396

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5426
Facsimile: (202) 672-5399

Glenn Law
Attorney for Applicant
Registration No. 34,371